

REMARKS

Reconsideration and allowance of the present application are respectfully requested. Claims 1-3, 11-13, and 15-20, and 23-35 are currently pending in this application.

Record of January 23, 2006 Telephonic Interview

A telephonic interview was conducted on January 23, 2006 at the request of the undersigned. Participating in the interview were the undersigned and Examiner Joni Hsu. The undersigned thanks the Examiner for the courtesies extended during that interview.

In the interview, the undersigned presented an overview of the arguments to be set forth below in the current Response. The Examiner stated that the Patent Office would consider the Applicant's arguments upon presentation of a written response. No agreement was reached during the interview as to the allowability of the claims.

Regarding the 35 U.S.C. § 103 Rejections

Claims 1-3, 6, 9, 11-13, 16, 19, and 26-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Published Application No. 20040054689A1 to Salmonsens et al. (referred to below as "Salmonsens") in view of U.S. Patent No. 6,611,269 to Uehara et al. (referred to below as "Uehara"). Applicant respectfully traverses this rejection for the following reasons.

Neither Salmonsens nor Herrera, whether considered alone or in combination, discloses the subject matter of the claims. For example, consider independent claim 1, reproduced below in its entirety:

1 1. A method for processing video data in an apparatus including a computer
2 processing module and a graphics processing module, comprising:
3 receiving a principal video stream from a source via plural inputs to the graphics
4 processing module, the plural inputs associated with respective components of the principal
5 video stream;
6 receiving a video sub-stream containing supplemental information associated with
7 the principal video stream via another input to the graphical processing module;
8 in a single stage operation, performing, by the graphics processing module, an
9 operation on the principal video stream and combining the principal video stream with the
10 video sub-stream to produce processed data, wherein the single stage operation requires only
11 a single read transaction to perform the single stage operation; and
12 outputting the processed data,
13 wherein each of the plural inputs for receiving the principal video stream and the
14 other input for receiving the video sub-stream refer to separate inputs, and
15 wherein the graphics processing module executes video processing tasks using a 3D
16 graphics pipeline.

17
18 The primary reference, Salmonsens, describes an emulator interface that can
19 analyze content communications to determine supported content formats, determine the
20 format of presented content, and reformat or transcode the content to place the presented
21 content in the supported format (note paragraph 0007 of Salmonsens). The video
22 processing associated within this emulation can involve: removing an arbitrary frame
23 region for processing; de-interlacing a video frame; enlarging or reducing video width or
24 height; filtering for image resizing; removing an arbitrary frame region for encoding;
25 downsampling of video width/height; video frame flipping or mirror imaging; gamma

1 correcting; anti-aliasing; and color manipulating (note, for example, the list enumerated
2 in claim 18 of Salmonsens).

3 The secondary reference, Uehara, discloses a video processing unit 106 that
4 includes a data selection means 1061 for reading out display data from an output buffer
5 means 105. The data selection means 1061 selects data to be input to an arithmetic unit
6 A 1062 and an arithmetic unit B 1063. Note column 8, lines 13-22 of Uehara. In one
7 implementation, the arithmetic unit A 1062 performs the operation: $\alpha \times A + \beta \times B + C$,
8 and the arithmetic unit B 1063 performs the operation $\gamma \times D + (1 - \gamma) \times E$, wherein A, B,
9 C, D, and E represent video data selected by the data selection means 1061. That is, A is
10 video data output from the output buffer means 105, B is video data which is the
11 arithmetic operational result carried out in the past by the arithmetic units (1062, 1063), C
12 is video data for background color or the like, D is video data of an on-screen display or
13 the like, and E is video data selected by the data selection means 1061 from fixed value
14 data (for example zero) or the like. See column 8, lines 34-61 of Uehara. Fig. 3 shows
15 the operations performed by the arithmetic units (1062, 1063) according to one of
16 Uehara's implementations. In these operations, the arithmetic units (1062, 1063) can
17 perform, for instance, up-scaling and blending.

18 Neither Salmonsens nor Uehara disclose the invention recited in claim 1, whether
19 these documents are considered alone or in combination. Representative deficiencies of
20 these documents are outlined as follows.

21 First, claim 1 is directed to a method for processing video data in an "apparatus
22 including a computer processing module and a graphics processing module." Claim 1
23 further recites that "the graphics processing module executes video processing tasks
24 using a 3D graphics pipeline." Neither Salmonsens nor Uehara disclose a method that is
25 performed in the context of the above-recited kind of environment. That is, Salmonsens's

1 emulator interface and Uehara's video processing unit 106 refer to functionality that is
2 customized to meet specific video processing needs. This custom-tailored functionality
3 cannot be characterized as a graphics processing module which executes video
4 processing tasks using a 3D graphics pipeline in the manner recited in claim 1.

5 Second, claim 1 further recites "receiving a principal video stream from a source
6 via plural inputs to the graphics processing module," "receiving a video sub-stream
7 containing supplemental information associated with the principal video stream via
8 another input to the graphical processing module, the plural inputs associated with
9 respective components of the principal video stream," and "in a single stage operation,
10 performing, by the graphics processing module, an operation on the principal video
11 stream and combining the principal video stream with the video sub-stream to produce
12 processed data." Claim 1 further recites that the "the single stage operation requires only
13 a single read transaction to perform the single stage operation," and that "each of the
14 plural inputs for receiving the principal video stream and the other input for receiving the
15 video sub-stream refer to separate inputs." Neither Salmonsens nor Uehara, whether
16 considered alone or in combination disclose this subject matter.

17 For instance, as discussed above, Salmonsens identifies a list of video processing
18 operations including: removing an arbitrary frame region for processing; de-interlacing a
19 video frame; enlarging or reducing video width or height; filtering for image resizing;
20 removing an arbitrary frame region for encoding; downsampling of video width/height;
21 video frame flipping or mirror imaging; gamma correcting; anti-aliasing; and color
22 manipulating. Further, Salmonsens states that an emulator 800 can "generate a plurality of
23 subpictures that overlay video for captions, sub-titles, karaoke, menus, and animation"
24 (paragraph 0137). However, nowhere does Salmonsens disclose the type of "single stage"
25 operation recited in claim 1. That is, there is absolutely no hint in Salmonsens that the

1 generating of subpictures (described in paragraph No. 0137) takes place in a single stage
2 along with any other processing performed on a principal video stream.

3 In acknowledgement of the shortcomings of Salmonsens, the Office Action now
4 relies on the Uehara document to address the “single stage” operation feature recited in
5 claim 1. As discussed above, Uehara’s two arithmetic units (1062, 1063) can perform
6 upscaling and blending. And as identified in the passages cited in the Office Action,
7 Uehara’s two arithmetic units can operate in parallel fashion. However, the dual-unit
8 functionality disclosed by Uehara does not comprise a graphics processing module for
9 receiving a principal video stream and a video sub-stream on separate inputs in the
10 manner recited in claim 1. For example, while figure 1 of Uehara shows multiple lines
11 feeding into the two arithmetic units (1062, 1063), there is no hint that these lines
12 comprise “plural inputs associated with respective components of the principal video
13 stream.”

14 Third, there is no motivation to combine Salmonsens and Uehara. Salmonsens is
15 directed to emulator functionality to transcode video signals into a specified format.
16 Uehara is directed to a video display unit 106, including a set top box for receiving digital
17 broadcasting signals (column 1, lines 6 and 7 of Uehara). These two systems are tailored
18 to suit specific objectives in the context of specific video processing environments.
19 There is no indication that Salmonsens’s system can benefit from Uehara’s solutions, or
20 vice versa, and thus, nothing links these documents together other than Patent Office’s
21 exercise of impermissible hindsight. The Office Action asserts that it would have been
22 obvious to combine the teachings of these two documents to “speed processing.” The
23 Office Action further states that the “advances of parallel processing are well-known in
24 the art.” Note page 4, last paragraph, of the Office Action. However, these statements
25 are generalities that ignore the concrete data processing environments disclosed by

1 Salmonsens and Uehara. Even if, assuming *arguendo*, that one of ordinary skill in the art
2 wanted to apply parallel processing to Salmonsens in some fashion, Uehara's and
3 Salmonsens's devices are so idiosyncratic and application-specific that there would have
4 been no suggestion of how these devices could be combined. Moreover, the invention
5 recited in claim 1 cannot be generalized as mere parallel processing when it recites a
6 particular solution for single stage processing involving the receipt of specific inputs (as
7 described above).

8 For at least the above-identified reasons, the Applicant submits that the
9 combination of Salmonsens and Uehara does not render claim 1 obvious under 35 U.S.C.
10 § 103. Independent claims 11 and 26-28 have been amended to recite related subject
11 matter to claim 1, and are therefore allowable for reasons similar to those provided above.

12 The remaining claims that are rejected under Salmonsens and Uehara (i.e., claims
13 2, 3, 6, 9, 12, 13, 16, 19, 29, and 30) depend from the above-identified independent
14 claims, and are allowable for at least this reason. These claims also recite additional
15 features which are not disclosed in the either Salmonsens or Uehara, whether considered
16 alone or combination.

17 Claims 5, 7, 8, 15, 17, 18, 21, 22, and 25 are rejected under 35 U.S.C. § 103(a) as
18 being unpatentable over Salmonsens and Uehara, and further in view of U.S. Patent No.
19 6,208,350 to Herrera (referred to below as "Herrera"). Applicant respectfully traverses
20 this rejection for the following reasons.

21 Claims 5, 7, 8, 17, and 18 depend variously from independent claim 1 or claim 11.
22 Also, independent claim 25 has been amended to recite related subject matter to claim 1.
23 These claims therefore distinguish over the base combination of Salmonsens and Uehara
24 for reasons similar to those presented above. (Note that claims 21 and 22 have been
25 canceled and therefore the rejection of these claims is rendered moot.)

1 Herrara does not remedy the deficiencies of Salmonsens and Uehara. More
2 specifically, Herrera discloses the use of a graphics engine to perform motion
3 compensation, YUV 4:2:0-to-4:2:2 conversion, and alpha blending. However, as pointed
4 out in the previous Response, Herrera does not disclose (or suggest) the single stage
5 processing recited in claim 1. Further, Herrera does not disclose the multi-input
6 processing operations now recited in amended claim 1.

7 For the above reasons, the Applicant requests that the § 103 rejection based on
8 Salmonsens, Uehara, and Herrera be withdrawn.

9 Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over
10 Salmonsens and Uehara, and further in view of U.S. Patent No. 6,573,905 to MacInnis et
11 al. (referred to below as "MacInnis"). Applicant respectfully traverses this rejection for
12 the following reasons.

13 Claim 10 depends from independent claim 1, and is therefore allowable for at
14 least this reason. MacInnis does not remedy the above-identified deficiencies of
15 Salmonsens and Uehara, whether these documents are considered alone or in any
16 combination. For instance, MacInnis does not disclose the single stage processing
17 described above in the context of claim 1.

18 Moreover, MacInnis does not disclose the claim elements for which it was cited.
19 Namely, the Office Action added the MacInnis document to address the recitation of a
20 Uniform Memory Architecture (UMA) in claim 10. While UMA design, considered in a
21 vacuum as a general concept, is not new, of course, MacInnis does not suggest the use of
22 the above-described single stage processing in *conjunction* with UMA. The *combination*
23 of the above-described single stage processing to UMA is particularly unique, as the
24 single stage processing helps overcome some of the limitations of UMA in a non-obvious
25 manner.

1 For the above reasons, the Applicant requests that the § 103 rejection based on
2 Salmonsens, Uehara, and MacInnis be withdrawn.

3 Finally, claims 23 and 24 are rejected under 35 U.S.C. § 103(a) as being
4 unpatentable over Salmonsens and Uehara, and further in view of U.S. Patent No.
5 6,753,878 to Heirich et al. (referred to as "Heirich"). Applicant respectfully traverses this
6 rejection for the following reasons.

7 Claims 23 and 24 depend from independent claim 11, and are therefore allowable
8 for at least this reason. Heirich does not remedy the above-identified deficiencies of
9 Salmonsens and Uehara, whether these documents are considered alone or in any
10 combination. For instance, Heirich does not disclose the single stage processing
11 described above in the context of claim 1. Further, while Heirich discloses texture
12 processing, there is no suggestion in Heirich of receiving the plural input streams as
13 recited in claim 1. For example, Heirich does not disclose at least "receiving a
14 principal video stream from a source via plural inputs to the graphics processing module,
15 the plural inputs associated with respective components of the principal video stream,"
16 and "receiving a video sub-stream containing supplemental information associated with
17 the principal video stream via another input to the graphical processing module."

18 Moreover, MacInnis does not disclose the claim elements for which it was cited.
19 Namely, there seems to be some confusion in the Office Action as to the purpose of the
20 "texturing units" recited in claim 23. As amended, claim 23 recites, in part, that the "the
21 graphics processing module includes multiple texturing units associated with the plural
22 inputs and the other input." The Office Action states that texturing is well known:

23
24Texturing is a method of adding realism to a computer-generated graphic. A texture is
25 added to a simpler shape, and this reduces the amount of computing needed to create shapes

1 and textures in the scene. The trend has recently been towards larger and more varied texture
2 images, together with increasingly sophisticated way to combine multiple textures for
3 different aspects of the same object, and therefore texture is needed. Texturing is well-
4 known in the art, widely used, and can be found many publications, such as the Wikipedia
5 Encyclopedia. (Page 16, second paragraph of the Office Action).

6
7 The Applicant does not dispute that texturing is well known in the environment that the
8 Examiner mentions, namely the construction of three-dimensional scenes. However, the
9 claimed subject matter uses texturing units in single stage processing in which a principal
10 video stream is combined with a video sub-stream to produce processed data (as recited
11 in claim 1). It is distinctly *not* known in the art to apply texturing in *this specific context*.
12 It is well established in the case law that the application of a known technological
13 component to a new use or in conjunction with a new combination of components may
14 support patentable subject matter; this is the case here, as none of the applied documents
15 discloses the application of different streams to different texturing units in the context of
16 the subject matter recited in claims 1, 23, and 24.

17 For the above reasons, the Applicant requests that the § 103 rejection based on
18 Salmonsens, Uehara, and Herich be withdrawn.

19 In conclusion, the Office Action generally attempts to establish a case for
20 obviousness by considering each of the features recited in the claims in abstract isolation
21 (such as parallel processing, UMA architecture, texturing, and so forth). But as clearly
22 stated in MPEP § 2141.02, the claimed invention must be considered as a whole.
23 Moreover, distilling the invention down to a “gist” or “thrust” (as by incorrectly
24 interpreting the invention as an exercise of parallel processing or texturing, and so forth)
25 disregards the requirement to consider the invention as a whole. The claims pass muster

1 under 35 U.S.C. § 103 and therefore the Applicant respectfully requests that all of the
2 obviousness-type rejections be withdrawn.

3
4 *Newly Added Claims*

5 New claims 31-35 have been added in this Response. These claims depend
6 variously on independent claims 1 and 25-28, and are allowable for at least this reason.

7
8 *Conclusion*

9 The arguments presented above are not exhaustive; Applicant reserves the right to
10 present additional arguments to fortify its position. Further, Applicant reserves the right
11 to challenge the alleged prior art status of one or more documents cited in the Office
12 Action.

13 All objections and rejections raised in the Office Action having been addressed, it
14 is respectfully submitted that the present application is in condition for allowance and
15 such allowance is respectfully solicited. The Examiner is urged to contact the
16 undersigned if any issues remain unresolved by this Amendment.

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18
19 Respectfully Submitted,

20
21 Dated: February 1, 2006

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